UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,169	07/25/2006	Hajime Suzuki	L7016.06103	7265

24257 7590 04/14/2009

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, NW., Suite 1200
WASHINGTON, DC 20006

EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
04/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,169	SUZUKI ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,9,11,14,15 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,9,11,14,15 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on Mar. 30, 2009, has been entered.

2. The examiner acknowledges the cancellations of claims 16 and 20 and the amendments to claims 1, 4, 9, 11, 14, 15, and 19 filed on Mar. 6, 2009, which were entered on the filing of the RCE. Claims 1, 4, 9, 11, 14, 15, and 19 are pending.

3. The rejections of claims 4, 9, 11, 14-16, 19, and 20 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Jan. 6, 2009, paragraph 5, have been withdrawn in response to the amendments to claim 4, 9, 11, 14, 15, and 19 and the cancellations of claims 16 and 20 filed on Mar. 6, 2009, which were entered on the filing of the RCE.

The objection to claim 1 set forth in the office action mailed on Jan. 6, 2009, paragraph 6, has been withdrawn in response to the amendment to claim 1 filed on filed on Mar. 6,

2009, which was entered on the filing of the RCE.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 4, 9, 11, 14, 15, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0033428 A1 (Niimi'428), as evidenced by Kirk-Othmer, Encyclopedia of Chemical Technology, fourth edition, Vol. 15, page 21, lines 12-19 (Kirk-Othmer) and the ACS File Registry RN 26201-32-1, combined with Japanese Patent 2002-229236 (JP'236). See the USPTO English-language translation of JP'236 for cites.

Niimi'428 exemplifies a photoreceptor comprising an aluminum cylinder as the conductive substrate, an undercoat layer having a thickness of 3.5 μm, and a photosensitive layer comprising a charge generation layer and a charge transport layer. Example 8 in paragraphs 0208 to 0212. Niimi'428 further teaches an electrophotographic imaging apparatus comprising a contact charging roller, an exposure device comprising a laser diode having a wavelength of 780 nm, and its photoreceptor. See Fig. 3 and paragraph 0224. It is well known in the art of lasers that a semiconductor laser is also called a "diode

laser," i.e., a laser diode. See Kirk-Othmer, p. 21, lines 12-19. The contact charging roller and exposure device meet the contact charging means and charging roller recited in instant claims 9, 11, and 19, and the exposure means recited in instant claims 14 and 15, respectively.

In example 8, the charge generation layer comprises a particular titanyl phthalocyanine pigment that exhibits a CuKα X-ray diffraction pattern having a main diffraction peak at a Bragg angle ($2\theta \pm 0.2^{\circ}$) of 27.3°, which meets the oxytitanium phthalocyanine limitation recited in instant claim 1. Paragraph 0019; example 1, titanylphthalocyanine pigment 1, in paragraph 0186 and in example 4 in paragraph 0194; and Fig. 9. Niimi'428 does not identify its titanylphthalocyanine pigment as "oxytitanium phthalocyanine" as recited in instant claim 1. However, as evidenced by the ACS File Registry RN 26201-32-1, it is well known that titanyl phthalocyanine is also identified as oxotitanium phthalocyanine.

Niimi'428 does not exemplify a photoreceptor comprising the undercoating layer as recited in the instant claims. However, Niimi'428 does not limit the composition of the undercoat layer or its thickness. See paragraphs 0116 to 0118. In paragraph 0116, Niimi'428 teaches that "[i]n the photoreceptor of the present invention, an undercoat layer may be formed

between the electroconductive substrate . . . and the photosensitive layer. The undercoat layer includes a resin as a main component."

JP'236 teaches an undercoat layer comprising a first layer comprising a polyimide precursor resin and a polyimide resin and second layer comprising a thermoplastic or a thermosetting resin, such as a melamine alkyd resin, which is coated on the first layer. See the USPTO translation, paragraphs 0006-0010, 0013, 0022, and 0025 and for example, example 5 in paragraph 0052. In JP'236 example 5, JP'236 exemplifies an undercoat layer comprising a first layer comprising the polyimide precursor resin with R_1 of formula R_1-1 and the polyimide resin with R_2 of formula R_2-1, and a second layer laminated on the first layer comprising a thermosetting melamine/alkyd resin. The first undercoat layer has a thickness of 1.0 μm. Translation, paragraphs 0010 and 0045. The two-layered undercoat layer meets the two-layer undercoat layer structure recited in instant claim 1. The polyimide resin with R_2 of formula R_2-1 is within the polyimide resin compositional limitations recited in instant claim 1.

According to JP'236, said two-layered undercoat layer suppresses the "accumulation of residual potential" and improves the "image quality" even when a thick undercoating layer is

formed. Paragraphs 0013 and 0022. JP'236 further teaches that when a photoreceptor comprises the JP'236 undercoat layer between the conductive substrate and the photosensitive layer of the photoreceptor, the conductive substrate defects are covered without degrading the electrophotographic properties of the photoreceptor. The photoreceptor has excellent stability of electrophotographic characteristics when repeatedly used and in environmental characteristics. Translation, paragraphs 0005 and 0068, and example 5 in Tables 1 and 2.

JP'236 does not exemplify an undercoat comprising the layer comprising the polyimide precursor resin and the polyimide resin having a thickness of 5.0 to 50.0 μm recited in instant claim. In example 5, JP'236 also does not disclose the thickness of the second layer comprising the thermosetting resin.

However, according to JP'236, the undercoat layer should have a thickness of 0.01 to 20 μm, preferably of 0.1 to 10 μm. Translation, paragraph 0019. JP'236 further teaches that the second layer comprising the thermosetting or thermoplastic resin should have a thickness of 0.1 to 10 μm, preferably of 0.8 to 5 μm. Translation, paragraph 0025. Thus, based on the teachings in JP'236, a person having ordinary skill in the art would readily recognize that in the JP'236 two-layer structure

undercoat layer, the thickness of the layer comprising the polyimide precursor and polyimide is the difference between the thickness of the undercoat layer and the thickness of the layer comprising the thermoplastic or thermosetting resin.

Accordingly, when the first layer and second layer in example 5 of JP'236, are adjusted to provide an undercoat layer having the upper thickness of 20 µm, or the preferred upper thickness of 10 µm, and the second layer having an upper thickness of 10 µm, or the preferred upper thickness of 5 µm, the thickness of the first layer comprising the polyimide precursor resin and the polyimide would be 10 µm or 5 µm, respectively. Both first layer thicknesses are within the range the thickness range of 5.0 to 50 µm recited in instant claim 1.

JP'236 further teaches that to suppress light interference in exposure with a semiconductor light beam, both the layer comprising the polyamide resin and the polyimide resin and the layer comprising the thermosetting or thermoplastic resin may further comprise a white pigment, such as titanium oxide particles. Translation, paragraph 0026. Both layers comprising titanium oxide particles meets the limitation that the "first layer and second layer contain titanium oxide" recited in instant claim 4.

JP'236 also teaches that the titanium oxide particles may be present in the amount of 1 to 4 times the amount of the polyimide precursor resin and the polyimide resin. Translation, paragraph 0024. In example 5 of JP'236, the first undercoat layer comprises 6 parts by weight of the polyimide precursor resin with R_1 of formula R_1-1 and 4 parts by weight of the polyimide resin with R_2 of formula R_2-1. Translation, paragraphs 0045 and 0052. When titanium oxide particles are added in an amount of 10 parts by weight to the first undercoat layer of example 5 of JP'236, i.e., 1 times the amount of the polyimide precursor and polyimide resins, the weight ratio of the polyimide resin to the titanium oxide particles would be 0.4, which is within the weight ratio of polyimide resin to titanium oxide particles of 3:1 to 1:4 recited in instant claim 4. According to JP'236, when titanium oxide particles are added to the undercoat layer, the undercoat layer's dielectric constant increases and a thicker undercoat layer can be used and dispersibility improves. Translation, paragraph 0012.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings in JP'236, to adjust, through routine experimentation, the thickness of the both the first layer comprising the polyimide precursor and polyimide and the second layer comprising the thermosetting resin in the two-

layered undercoat layer exemplified in example 5 of JP’236, such that the total thickness of the undercoat layer is within the teachings of JP'236, e.g., 10 or 20 μm, and the first layer has a thickness as recited in instant claim 1, e.g., 5 or 10 μm. It would also have been obvious for that person to further include titanium oxide particles in the both the second layer and the first layer comprising the polyimide precursor resin and polyimide resin, where the first layer comprises the titanium oxide in an amount within range recited in instant claim 4, e.g., a weight ratio of polyimide resin to titanium oxide particles of 4 to 10, as taught by JP’236. It would have further been obvious to that person to use the resultant two-layered undercoat layer, where the first layer comprising the polyimide precursor and polyimide has a thickness as recited in instant claim 1, with or without the presence of titanium oxide particles in both layers, as the undercoat layer in the photoreceptor disclosed by Niimi’428. It would have also been obvious for that person to use the resultant photoreceptor in the electrophotographic imaging apparatus disclosed by Niimi’428. That person would have had a reasonable expectation of successfully obtaining an electrophotographic photoreceptor and an imaging apparatus comprising said photoreceptor that both have excellent stability in electrophotographic properties when

used repeatedly and in environmental characteristics as disclosed by JP'236.

Applicants' arguments filed on Mar. 6, 2009, have been fully considered but they are not persuasive.

Applicants assert that because instant claim 1 requires an undercoat layer comprising a first layer having a thickness of 5.0 to 50.0 μm and a second layer, the overall thickness of the undercoat layer recited in instant claim 1 falls outside the preferred undercoat layer thickness range of 0-5 μm disclosed by Niimi'428. Applicants further assert that although JP'236 states that the undercoat layer may have a thickness of 0.01-20 μm, preferably of 0.1-10 μm, "JP'236 is completely silent as to the thickness of the 'layer which consists of a polyimide precursor and polyimide resin.'" Applicants conclude that JP'236 does not teach or suggest the thickness of the first layer containing a polyimide resin of 5.0 to 50.0 μm recited in instant claim 1.

Applicants' assertions are not persuasive for the following reasons:

(1) Although Niimi'428 discloses that the undercoat layer thickness is preferably 0-5 μm, that disclosure in Niimi'428 does not limit the thickness of the undercoat layer to be used in the Niimi'428 photoreceptor. As discussed in the rejection,

Niimi'428 does not limit the composition or the thickness of the undercoat layer. See the above rejection, paragraph bridging pages 4 and 5. The disclosure of a reference is not limited to its examples or to its preferred embodiments. Rather, a reference is relevant for all that it teaches. In re Heck, 216 USPQ 1038, 1039 (Fed. Cir. 1983). "[I]n a section 103 inquiry, 'the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.'" Merck & Co. Inc. v. Biocraft Laboratories Inc., 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) (quoting In re Lamberti, 192 USPQ 278, 280 (CCPA 1976)).

(2) Although JP'236 does not explicitly disclose the thickness of the layer comprising the polyimide precursor and polyimide, as discussed in the above rejection, JP'236 in paragraph 0025 teaches that the layer comprising a thermoplastic or thermosetting resin "should be in the range of 0.1-10 μm, or preferably in the range of 0.8-5μm." As discussed in the rejection above, based on the teachings in JP'236, a person having ordinary skill in the art would readily recognized that in the JP'236 two-layer structure undercoat layer, the thickness of the layer comprising the polyimide precursor and polyimide is the difference between the thickness of the undercoat layer and

that of the layer comprising the thermoplastic or thermosetting resin. For the reasons discussed in the above rejection, it would have been obvious for that person, to adjust through routine expectation, the thicknesses of the two layers in the two-layer structured undercoat layer in example 5 of JP'236, such that the thickness of the undercoat layer is within the teachings of JP'236 and the that of the layer comprising the polyimide precursor and the polyimide is within the thickness range recited in instant claim 1, e.g., 5 or 10 μm.

Accordingly, for the reasons discussed in the above rejection, the instantly claimed invention is rendered prima facie obvious over the combined teachings in the prior art. The rejection of instant claims 1, 4, 9, 11, 14, 15, and 19 stand.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Sandra Sewell, whose telephone number is (571) 272-1047.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janis L. Dote/
Primary Examiner, Art Unit 1795

JLD
Apr. 11, 2009